

REMARKS UNDER 37 C.F.R. 1.111

Reconsideration and allowance of all claims are respectfully requested.

For a long time coal pyrolysis has been aggravated by the presence of oxygen in the retort. Solutions were attempted to try to remove the oxygen from atmospheric gases surrounding the coal before it was retorted. The trick of the invention is to recognize that oxygen which produces the problem is embedded in the coal itself (please see the specification page 5, lines 4-7). The solution which the invention proposed is to preheat the coal in a vibrated vessel to below the pyrolysis temperature to drive off oxygen from within the coal itself (please see the specification page 5, lines 11-14). The invention discovers and solves the problem. The oxygen bound in the coal itself produces the problem of heavy viscous black tar (page 2, line 6).

The prior art neither recognizes the problem nor suggests a solution. Selep, for example, thinks the problem is atmospheric oxygen and uses two sequential gas locks to solve what he believes the problem to be.

It is noted that all of the rejections are based on §103 and a combination of references.

Nothing inherent in Dospoy and Selep would have suggested their mutual combination in a manner proposed by the examiner.

Dospoy feeds coal from a bunker 10 to a hammer mill 15 to a surge pin and weigh feeder 22, from whence it is mixed with kraft cores from storage bunker, 30 LDPE plastic and paper sludge, and

dust from a cooler dust cyclone 46. The mixed product is flowed through a conditioning tank and metering screws into mill extruders, which make pellets which are dried in ambient air and then transferred to a pellet bunker. There is absolutely nothing in Selep's gas lock system for charging a pressurized gasification reactor that has anything at all to do with the Dospoy system. In fact, the two would lead away from each other.

The examiner has used the applicant's claims to pick unrelated bits and pieces from the prior art which have no autogenous motivation or suggestion for combination.

Selep and Potter cannot be combined.

Potter's purpose is to decontaminate inert materials such as soil, sludge, biological and other waste materials contaminated with chemical compounds (column 1, line 20). Potter's purpose also is to treat hazardous and non hazardous components from manufacturing processes. Although Potter's drawings are complex, it is clear that he simply feeds materials from a live bottom hopper through a weigh belt and screw feeder directly into a rotary calciner with natural gas fired burners. There is absolutely nothing in Potter or in Selep that would have suggested their mutual combination.

Bridle and Selep cannot combined.

There is absolutely nothing in Bridle and Selep which would have suggested their mutual combination. Bridle transfers sludge from a hopper 36 to several screw conveyors 40, 44, 16 to a reaction zone with blades 50, which lift the sludge upward and

drop it. Finally, the sludge is collected in a sealed char storage bin 64. Nothing in any of those features would have inherently suggested combining Bridle with Selep.

Selep and Piotter cannot be combined. Selep and Piotter have absolutely nothing inherent within the references which would have motivated their mutual combination in a manner proposed by the examiner.

Piotter has a large vertical retort in which shale is dropped and in which char is combusted. The effluent from combuster 36 is passed to retort 12 through line 42 and lines 30, 32 and 34.

There is absolutely nothing in the Selep reference which would have suggested the combination of Selep with Piotter, and there is absolutely nothing in the Piotter reference which would have suggested combination with Selep.

As in all of the combinations of prior art references, the examiner has simply picked features from the references using the claims of the invention as a guide. That picking and choosing features from references using the invention as a road map has long been proscribed by statute, rule and law.

The examiner has not applied the Graham v. John Deere test to any of the new §103 rejections.

None of the prior art references should have been combined because there is no motivation within the references which would have suggested their combination. Nor is there anything inherent

in the references which would have suggested their combination in the manner proposed by the examiner.

Even if the references were to have been combined, they would not have met the limitations of the claims.

Claims 1-6, 11-16 and 22 and 23 specifically point out features of the invention not found in either Selep or Dospoy. Neither Selep nor Dospoy have a pretreatment vessel for holding a bed of coal. Neither Selep nor Dospoy has a preheater for heating the bed of coal to a temperature below coal pyrolysis temperature. Neither Selep nor Dospoy has an enclosure around a vessel for preventing air from contacting the bed of coal particles. Neither Selep nor Dospoy has an oxygen remover for removing oxygen released from the heated coal particles, and transporting oxygen away from the enclosure so that the partial pressure of oxygen in the pretreatment region is kept low. Neither Dospoy nor Selep has a vibrating machine connected to a pretreatment vessel with a preheater. Neither Dospoy nor Selep has the vibrating machine for vibrating a vessel. Neither Selep nor Dospoy has a vibrating machine for providing rapid mixing and heating of coal particles entering the bed of coal particles. Neither Dospoy nor Selep has a vibrating machine connected to a vessel for vibrating the vessel and providing rapid mixing and heating of coal particles entering the bed in the vessel for providing uniform removal of oxygen from coal particles.

Each of the above features is positively set forth in claim 1. None of the above features is found in either reference.

Claim 2 adds, but neither of the references has, an inlet for feeding coal particles to such a pretreatment vessel as described in claim 1, or an outlet for removing particles from such a vessel as described in claim 1. Claim 2 would not have been obvious from Dospoy and Selep.

Claim 3 specifically points out a pyrolysis retort near the pretreatment vessel as described in claim 1 and transfer passages for transferring heated coal particles from the pretreatment vessel to the pyrolysis retort. Claim 3 could not have been obvious from the two references.

Claim 4 further describes providing a pretreatment vessel which serves as a dryer for removing moisture from the coal. That is not present in either Dospoy or Selep. Selep does not have a pretreatment vessel and does not remove moisture from the coal, and to the contrary, adds moisture to the system in the form of steam through blade-stripping port 64. Dospoy has none of those things. The combination of Selep and Dospoy would not have been obvious, and such a combination would not have rendered the invention obvious.

Claim 5 adds to claim 1 a vibrating machine connected to the vessel, which has all of the features of claim 1, for vibrating the vessel and providing rapid mixing and heating of coal particles, which is not found in either reference, and for providing uniform removal of oxygen from the coal particles by the vibrating machine connected to the vessel, which is not found

in either of the references. The subject matter of claims 5 and 1 would not have been obvious from the references.

Claim 6 adds to claim 1 a gas input connected to the vessel as described in claim 1 for contacting the coal particles in the bed within the vessel. In the references there is no outlet for a sweep gas connected to a vessel as specifically pointed out in claim 1. There is no inlet and outlet to the vessel as particularly pointed out in claim 1 in either reference. There is no extraction of oxygen from the coal particles themselves in a vessel, as specifically pointed out in claim 6, in either reference.

Claim 11 particularly points out a coal pyrolysis pretreatment which heats a bed of coal particles. There is nothing in the references which shows coal pyrolysis pretreatment with heating of a bed of coal particles. Selep is completely silent about heating and never uses the word heating or pretreating. Selep strips coal that may be clinging to the blades 35 (column 4, line 25, column 5, line 68) "with stripping gas such as steam". Selep never mentions that steam is used to preheat coal. The tiny amount of steam used for stripping blades could not and would not preheat coal. Indeed, the steam is admitted through port 64, which is at a point where the blades 35 and compartments 38 are free of coal (Figure 1) and exhausts from those compartments through port 56. Pretreating by heating in a vessel is totally missing in Selep and is imaginative and figmentary and not well based on fact, and indeed is contrary to

the facts specifically set forth in Selep. Dospoy does not have a pretreatment vessel for holding a bed of coal particles. Indeed, Dospoy would lead away from pretreating the coal particles in a vessel holding a bed of coal particles. Dospoy would have led away from pretreating and preheating the coal particles. Nothing in either reference would have suggested removing oxygen released from heated coal particles, as specifically set forth in claim 11, and nothing would have suggested removing oxygen released from heated coal particles from the enclosure before subjecting the coal to pyrolysis. Nothing in either reference would have suggested vibrating the vessel and providing rapid mixing and heating of coal particles entering the bed from an input to provide uniform removal of oxygen from the coal particles, as specifically set forth in claim 11. Claim 11 would not have been obvious from a combination of the references, because none of the features in claim 11 is found in either reference.

Claims 12 through 16 individually add other features to claim 11, none of which would have been obvious from the references.

Claim 12 would not have been obvious from the references, because claim 12 specifically points out inputting coal particles to the pretreatment vessel, as described in claim 11, and removing particles from that pretreatment vessel, as described in claim 11. Nothing in the references would suggest those steps.

Claim 13 adds to claim 11 the transferring of heated coal particles from the vessel to the pyrolysis retort near the vessel. None of those features would have been obvious from the references.

Claim 14 specifically points out removing moisture from the coal. Neither reference specifically points out removing moisture from the coal. Indeed, Selep adds moisture to the system in the form of steam.

Claim 15 adds to claims 13 and 11, further comprising vibrating the vessel and providing rapid mixing and heating of coal particles entering the bed from the input to provide uniform removal of oxygen from coal particles, none of which is found in either of the references.

Claim 16 further adds to claim 11 the contacting of coal particles in the bed with an oxygen removal gas, and removing the oxygen removal gas with the oxygen removed from the coal particles. There is nothing in the references which suggests either of those steps. Selep does not have coal particles in a bed, and does not talk about removing oxygen from the coal particles and does not even mention removing oxygen from the coal particles. Dospoy never discusses and leads away from removing oxygen from coal particles in a bed.

Claim 22 adds to claim 11 the further holding of the bed of coal particles in the pretreatment vessel and transporting oxygen released from the heated coal particles away from the enclosure for keeping the partial pressure of oxygen in the pretreatment



region low. Neither reference has any of those features. Selep leads away from holding a bed of coal particles, and both Selep and Dospoy lead away from the pretreatment vessel holding coal particles and transporting oxygen away from heated coal particles. Selep leads away from heating coal particles because Selep never mentions heating. Selep never recognizes the problem that the present invention solves.

Claim 23 adds to claim 11 transferring the pretreated coal particles to a pyrolysis retort. There is no pretreating of coal particles in Selep, which simply describes gas locks and nothing more. No transferring of pretreated coal particles to a pyrolysis retort is in either reference.

None of the claims would have been obvious from a combination of Selep and Dospoy. Nothing inherent in Selep and Dospoy would have suggested or motivated their combination.

Claim 7 has several features which are not found in Selep of Potter.

The pretreatment vessel for holding a bed of coal particles is not found in Selep or Potter. The preheater for heating the bed of coal particles is not found in Selep or Potter. The enclosure around a vessel which holds and preheats coal particles is not found in either reference. An oxygen remover for removing oxygen release from heated coal particles is not found in either reference. Selep simply traps gas and does not heat particles or remove oxygen released from heated coal particles. Potter does not have oxygen removed from heated coal particles. Potter

simply feeds contaminated materials such as soils to a rotary calciner. Potter does not deal with coal and has no relation to coal, and has no heater for removing oxygen from coal. Nothing in Potter and Selep would have suggested their combination. Nothing in either reference suggests an oxygen remover for removing oxygen released from heated coal particles, as specifically pointed out in claim 7.

Claim 17 adds to claim 16 and claim 11 moving oxygen from coal particles and removing that oxygen from the heated bed of coal particles, and supplying low oxygen flue gas to a bed of coal. None of those features would have been obvious from either of the Selpo or Potter references.

Claims 8 and 18 distinguish the invention from the Selep and Bridle references by specifically pointing out the pretreatment vessel for holding a bed of coal, which neither reference has. The preheater for heating the bed of coal to temperature below coal pyrolysis and an oxygen remover for removing oxygen released from the heated coal particles are not found in Selep or Potter. None of those features would have been obvious from either reference.

Claim 8 further points out collecting non condensable combustible gases from coal pyrolysis, and burning the non condensable combustible gases for supplying hot partially combusted non condensable gases from the burner to the bed of coal particles to serve as a sweep gas for heating and removing oxygen from the bed of coal particles. None of those features is

described in either the Selep or Bridle references. Neither has a bed of coal particles, and neither heats a bed of coal particles. Neither reference removes oxygen from coal particles.

Nothing in Selep or Bridle would have suggested or motivated their mutual combination.

Claim 18 distinguishes the invention from Potter and Selep by pointing out the coal pyrolysis pretreatment process, comprising heating a bed of coal particles to a temperature below coal pyrolysis temperature range, which would not have been obvious from either reference, preventing air from contacting the bed of coal particles, which would not have been obvious, and removing oxygen released from the heated coal particles, which would not have been obvious from either reference, before subjecting the coal to pyrolysis, which would not have been obvious from either reference.

Claim 18 further points out collecting non condensable combustible gases from coal pyrolysis and burning the collected non condensable combustible gases for heating the bed of coal, which would not have been obvious from either reference. Claim 18 further points out supplying partially combusted collected non condensable gases from the burner to the bed of coal particles for removing oxygen from the bed of coal particles. No part of those steps would have been obvious from either reference or from the combination of references. Nothing inherent in Bridle and Selep would have motivated their combination.

Nothing inherent in Selep and Piotter would have motivated their combination. Even if the references would have been combined, nothing in the references would have suggested a coal pyrolysis pretreatment vessel for holding a bed of coal particles, as specifically pointed out in claim 10. Nothing would have suggested a preheater for heating a bed of coal particles, as pointed out in claim 10. Nothing would have suggested heating a bed of coal particles to below coal pyrolysis temperature, as pointed out in claim 10. And nothing in the references would have suggested an enclosure around the vessel for preventing air from contacting the bed of coal particles, as pointed out in claim 10. Nothing would have suggested an oxygen remover for removing oxygen released from the heated coal particles, as pointed out in claim 10, because nothing would have suggested removing oxygen from heated coal particles in either reference.

Nothing would have suggested that the preheater is a furnace holding ceramic balls a size larger than the coal particles in the bed. That would have required a figmentary leap of imagination. Nothing in the references would have suggested circulating ceramic balls from the furnace to the bed of coal particles, as specifically pointed out in claim 10, and nothing would have suggested heating coal particles in a pretreatment vessel and recycling the balls through the furnace for reheating, as specifically pointed out in claim 10. Nothing in the two references would have suggested those particular features as

pointed out in the process steps of claim 20. Specifically, none would have suggested heating a bed of coal particles to a temperature below a coal pyrolysis temperature, and none of the references would have suggested removing oxygen released from the heated coal particles from the enclosure before subjecting the coal to pyrolysis. Neither reference would have suggested the heating in a furnace of ceramic balls of a size larger than coal particles in the bed, and nothing in the references would have suggested circulating heated ceramic balls from the furnace to the bed of coal particles for heating coal particles in a vessel and recycling the balls through the furnace, as specifically pointed out in claim 20.

Claim 21 previously indicated as allowable has not been specifically pointed out by the examiner, and it is difficult, if not impossible, to predict how the examiner would have possibly considered the subject matter of that claim to have been rendered obvious by the references.

Throughout the rejections the examiner has discussed references without discussing what part of the references is applied, and has discussed claims generally without pointing out what elements or features are believed to correspond between the claims and the prior art.

"Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the

manner claimed." In re Kotzab, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

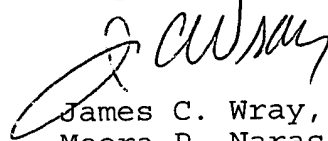
The Federal Circuit has held that the Patent Office is obligated to make necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its conclusion. In re Zurko, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). The decision "must be justified within the four corners of the record." In re Gartside, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000). The examiner has neither made the necessary findings nor provided any reasoning for the arbitrary conclusion of obviousness based on an admission that the references do not teach the claimed features.

The examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the examiner. The 'prima facie case' notion ... was intended to leave no doubt among examiners that they must state clearly and specifically any objections (the prima facie case) to patentability, and give the applicant fair opportunity to meet those objections ... the concept serves to level the playing field and reduces the likelihood of administrative arbitrariness (emphasis added). In re Oetiker, 25 USPQ2d 1443, 1447 (Fed. Cir. 1992) (Plager, J., concurring); see In re Piasecki, 233, USPQ 785, 788 (Fed. Cir. 1984).

CONCLUSION

Reconsideration and allowance of all claims are requested.

Respectfully,



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